

## GARMENT HANGER

This invention relates to a garment hanger.

Moulded garment hangers for, for example, suits and jackets are known. In such known garment hangers, arms and a central suspension portion linking the arms are a one-piece moulding and the garment hangers typically have an inverted U-shaped transverse cross-section with the arms racked forward. Back and front faces of the garment hanger are substantially parallel or diverge in a vertical direction in use to allow removal of a core of a moulding tool used in their manufacture from the arms and central suspension portion. As a result, in use a centre of gravity of the garment hanger and a suspended garment aligned below the suspension hook tends to tip the garment hanger forward so that a lower back edge of the garment hanger is pushed into the suspended garment, that is, in use the rear face of the garment hanger tends to be inclined to the vertical with the lower edge protruding into a garment suspended on the garment hanger. This tends to mark the garment. Such garment hangers are also subject to twisting under torsion when loaded with a garment.

Attempts have been made to mitigate these disadvantages by raising a split line joining an upper and lower half of an injection mould used to mould a garment hanger having an inverted U-shaped cross-section and providing an inward curving portion of the garment hanger below the split line. That is, the split line may be raised to some 5 mm above a bottom edge of the garment hanger compared with a normal 1 or 2 mm. However, a radius of the inward curving portion is limited by a thickness of walls of the garment hanger, since an inward curving portion comprising an undercut would prevent removal of the garment hanger from the mould, and therefore it is not possible to provide a suitable curvature to overcome the problem of the lower edge of the garment hanger marking the garment. Attempts have also been made to overcome these disadvantages by blow moulding hollow garment hangers. However, blow moulded garment hangers tend to have greatly varying wall thicknesses throughout the garment hanger, which are difficult to control. It is therefore difficult to ensure that greatest thicknesses occur where greatest strength is required. There are also difficulties with blow moulded garment hangers of incorporating bosses for receiving a suspension hook of the garment hanger.

Solid wooden garment hangers without protruding edges are known, but are relatively expensive compared with moulded garment hangers of plastics material.

A hanging package display unit is also known from US 6,209,763 and US 2001/0015363 including a first hanger having a central neck member, with the neck member having a receiving slot therein for receiving a hook member of a second like hanger and securing means for holding the first and second hangers together.

5 It is an object of the present invention at least to ameliorate the aforesaid disadvantages in the prior art.

According to a first aspect of the invention there is provided a garment hanger having at least one arm connected to a suspension portion, the garment hanger comprising a first moulded portion, forming a first proportion of the at least one arm and the suspension  
10 portion, mated and joined to at least a second moulded portion, forming a remaining second proportion of the at least one arm and suspension portion, to form a hollow, enclosed monocoque structure.

Advantageously, the first proportion is substantially a half.

Conveniently, in use, the first portion is an upper portion of the garment hanger and  
15 at least one of the portions of the at least a second portion is a lower portion of the garment hanger.

Alternatively, in use, the first portion is a front or rear portion of the garment hanger and at least one of the portions of the at least a second portion is a rear or front portion of the garment hanger, respectively.

20 Conveniently, the first portion is welded to at least one of the portions of the at least a second portion.

Optionally, the first portion is joined to at least one of the portions of the at least a second portion by adhesive.

Optionally, the first portion is joined to at least one of the portions of the at least a  
25 second portion by cooperating clip means on the first portion and on the at least one of the portions of the at least a second portion.

Advantageously, the garment hanger comprises bar means substantially horizontal in use for supporting a garment thereby.

Preferably, the bar means is an extruded bar.

Advantageously, the bar means comprises a bar at least partially coated with a non-slip material having a higher coefficient of friction than material of the bar.

Preferably, the bar is coated on an upper, in use, surface.

5 Advantageously, the bar is coated on at least one substantially vertical, in use, surface.

Advantageously, the garment hanger has two opposed arms and the bar means passes through apertures in the opposed arms of the garment hanger such that opposed ends of the bar means are each located within the garment hanger.

10 Conveniently, an upper face of the bar means is substantially convex and a lower face is substantially planar.

Advantageously, the garment hanger comprises two opposed arms and loop engaging means for supporting a garment from a loop thereby.

Conveniently, the loop engaging means comprise a respective loop engaging means in a respective cavity in each of the opposed arms.

15 Advantageously, the garment hanger comprises bar means, and the loop engaging means comprise a respective loop engaging means in respective cavities in the bar means proximate respective opposed ends of the bar means.

Advantageously, the garment hanger is at least partially of translucent or transparent material.

20 Preferably, the garment hanger comprises alignment means for aligning the first portion with at least one of the portions of the at least a second portion for joining the first portion to the at least one of the portions of the at least a second portion.

25 Conveniently, the garment hanger comprises engagement means for engaging suspension means of a further garment hanger for suspending the further garment hanger from the engagement means.

Advantageously, the engagement means are located in the suspension portion.

Preferably, the engagement means are hook means.

30 According to a second aspect of the invention, there is provided a method of manufacturing a garment hanger having at least one arm connected to a suspension portion, comprising the steps of: moulding a first portion of the garment hanger comprising a first

proportion of the at least one arm and suspension portion; moulding at least a second portion of the garment hanger comprising a remaining second proportion of the at least one arm and suspension portion; and joining the first portion to the at least a second portion to form a hollow enclosed monocoque structure.

5 Preferably, the first proportion is substantially one half.

Conveniently, the step of joining the first portion to at least a second portion includes at least one of adhering, welding or connecting with cooperating clip means located on the first portion and on at least one portion of the at least a second portion.

10 Advantageously, the garment hanger has two opposed arms, and the method comprises the further steps of: providing apertures proximate outer extremities of the arms; providing bar means; and inserting the bar means through the apertures such that when the first portion is joined to the at least a second portion opposed ends of the bar means are located within the garment hanger.

Conveniently, the step of providing bar means comprises extruding a bar.

15 Preferably, the step of extruding the bar includes co-extruding a non-slip coating on the bar.

Advantageously, the step of moulding at least a second portion comprises moulding loop engaging means in the at least a second portion.

20 Advantageously, the step of moulding at least a second portion comprises moulding engagement means in the at least a second portion for engaging suspension means of a further garment hanger for suspending the further garment hanger from the garment hanger.

Preferably, the step of moulding engagement means comprises moulding engagement means in the suspension portion.

25 Preferably, the step of moulding engagement means comprises moulding hook means.

The invention will now be described, by way of example, with reference to the accompanying drawings in which:

30 Figure 1 is an exploded view of a first embodiment of a garment hanger according to the invention;

Figure 2 is an enlarged view of part B of the garment hanger of Figure 1;

Figure 3 is a perspective view of the garment hanger of Figure 1;

Figure 4 is a top view of the garment hanger of Figure 1;

Figure 5 is an end view of the garment hanger of Figure 1;

5 Figure 6 is a front view of the garment hanger of Figure 1;

Figure 7 is an enlarged transverse cross-section along line A-A of Figure 6 in a direction of the arrow-headed lines;

Figure 8 is an enlarged perspective view of a clip, in an open position, suitable for joining the upper and lower portions of the garment hanger of Figure 1;

10 Figure 9 is an enlarged perspective view of the clip of Figure 8, in a closed position;

Figure 10 is perspective view of an underside of a second embodiment of a garment hanger according to the invention;

Figure 11 is an enlarged perspective view of a hook receiving aperture in the underside of the garment hanger of Figure 10;

15 Figure 12 is a front view of the garment hanger of Figure 10;

Figure 13 is a transverse cross-section view along line C-C of Figure 12, in a direction of the arrow-headed lines;

Figure 14 is a further perspective view of an underside of the garment hanger of Figure 10; and

20 Figure 15 is an enlarged perspective view of a finger for a skirt loop in the underside of the garment hanger of Figure 10.

In the Figures, like reference numerals denote like parts.

25 A first embodiment 10 of a garment hanger according to the invention, as shown in Figures 1 to 7, has an upper portion 20 and a lower portion 40, which together form a central suspension portion 11 and opposed arms 12, 13 of the garment hanger. The upper portion is of a substantially similar shape to a known one-piece moulded garment hanger. That is, the arms are inclined downwards from the horizontal in a direction away from the central suspension portion, are raked forward and have somewhat bulbous extremities. That is, as best seen in Figures 4 and 5, a front face of the garment hanger is concave and a

rear face of the garment hanger is convex, to follow a shape of shoulders of a garment to be supported by the garment hanger. Upper faces of the arms are joined to an upper face of the central suspension portion by an upwardly concave portion and a lower face of the central suspension portion is downwardly concave.

5       The upper portion 20 forms a major portion of the central suspension portion and substantially half of each of the opposed arms and the lower portion 40 comprises the remaining proportions of the central suspension portion and each of the opposed arms. However, the upper and lower portions of the garment hanger may comprise different proportions of the garment hanger than substantially one half.

10       Extremities of the arms 12, 13 are joined by a trouser or skirt bar 50. However, a garment hanger according to the invention does not necessarily have such a bar. As shown in Figure 3, the garment hanger is provided with a suspension hook 60 by which the garment hanger may be suspended, a shank of which suspension hook is joined by a boss 61 to the central suspension portion 11.

15       As best seen in Figure 7, and to some extent in Figure 1, the upper portion 20 has a substantially inverted U-shaped transverse cross-section and the lower portion 40 has a substantially U-shaped transverse cross-section such that a peripheral edge 21 of the upper portion 20 mates with a peripheral edge 41 of the lower portion 40. As shown in Figure 7, the peripheral edges 21, 41 are joggled or dog-legged to improve mating engagement and  
20       location of the upper portion 20 with the lower portion 40.

Referring to Figures 1 and 2, round-end slots 42, having a vertical projection corresponding to a transverse cross-section of the skirt or trouser bar 50, are provided in a lower face 43 of the lower portion 40, proximate outer extremities of the arms 12, 13, to receive respective opposed ends of the bar 50.

25       With opposed ends of the bar 50 located in the respective slots 42, the upper portion 20 is welded or joined by adhesive to the lower portion 40. Alternatively the upper portion 20 is fastened by clips to the lower portion 40. Where the garment hanger comprises more than two portions methods of joining the various portions may differ from each other in a same garment hanger.

30       A suitable clip 80 is illustrated in Figures 8 and 9, substantially enlarged with respect to Figure 1 for clarity, the clip having, as illustrated, a lower male portion 81 and an upper

female portion 82. The male portion 81 has a resilient tang 811 with a shoulder 812 for engaging an edge 822 of a notch 821 in the female portion 82.

5 Opposed outer portions 813 of a mating edge of the male portion 81, both sides of the resilient tang 811, are rebated to form dog-legs for mating with co-operating rebated mating edge portions 823 of the female portion 82. The female portion 82 is provided with an indentation 824 between the rebated portions 823 of the mating edge to bridge a non-rebated central portion of the mating edge of the male portion corresponding with a location of the central tang 811. The tang 811 is located on an outer face 815 of the male portion 81 and has a projecting portion projecting beyond the mating edge such that an inner face of the projecting portion is substantially coplanar with the outer face 815 of the male portion 81. The inner face of the projecting portion is provided proximate an end of the projecting portion remote from remaining portions of the male portion 81 with the shoulder 812 and a ramped cam surface 816, tapering away from the shoulder 812 in a direction away from the mating edge of the male portion 81.

15 The female portion 82 is provided with a channel 826 for receiving the projecting portion of the tang 811, terminated remotely from the mating edge of the female portion with a cam portion 827 for cooperating with the cam portion 816 of the tang 811. Inward of the cam 827, and separated therefrom by a bridge 828 of an outer face 825 of the female portion 82, there is provided the notch 821 for receiving both the shoulder 812 and a portion of the cam portion 816 of the tang 811.

20 The clip 80 is further provided with two guide posts 819, 829. A first guide post 819 is located on the outer face 815 of the male portion 81 parallel to, and on a first side of, the tang 811 and projects from the outer face 815 past the mating edge of the male portion towards the outer face 825 of the female portion 82 as the male and female portions are brought together. The second guide post 829 is located on the outer face 825 of the female portion and extends beyond the mating edge of the female portion, such that the second guide post 829 projects towards the male portion, on a second side of the tang 811 opposed to the first side, as the male and female portion are brought together. Inner faces 8191, 8291 of the projecting portions of the first and second guide posts 819, 829 respectively are tapered away from the respective faces 825, 815 with which they engage respectively.

30 In use, as the male and female portions 81, 82 are brought together, the tapered faces 8191, 8291 of the guide posts 819, 829 engage the outer faces 825, 815 of the opposing

portion respectively to align the male portion with the female portion. As the female and male portions are brought closer together in alignment the projecting portion of the tang 811 engages and slides along the channel 826 in the outer face 825 of the female portion 82 until the cam surface 816 of the tang 811 engages the terminal cam surface 827 of the channel 826. The cam surfaces 816, 827 cooperate to raise the cam portion of the tang 811 resiliently to the outer face 825 of the female portion 825 to cross the bridging portion 828 of the outer face of the female portion between the channel 826 and the notch 821 until a portion of the cam portion of the tang 811 resiliently enters the notch 821 and the shoulder 812 lockingly engages the edge 822 of the notch 821, which edge 822 is substantially perpendicular to the outer face 825 of the female portion. Substantially simultaneously the rebated mating edge portions 823 of the female portion engage the rebated mating edge portions 813 of the male portion 81.

With the first portion 20 and second portion 40 of the garment hanger joined together, the garment hanger 10 forms a hollow monocoque structure in which the majority of stresses to which the garment hanger is subject are carried by an outer skin of the garment hanger. As a result, there is no requirement for internal strengthening ribs, or at least a requirement for less ribs than in the prior art. This improves the aesthetic appeal of the garment hanger compared with known garment hangers. In addition, instead of an opaque material, one or more of translucent, tinted or transparent materials may optionally be used, since no, or few, disfiguring internal ribs are visible. The absence of internal ribs also avoids sink marks on the surfaces of the garment hanger, which are associated with one-piece moulded garment hangers of the prior art.

A second embodiment 100 of a garment hanger according to the invention, as shown in Figures 10 to 15, has a similar overall structure to that of the first embodiment 10. As best seen in Figure 12, the second embodiment therefore has an upper portion 200 and a lower portion 400, which together form a central suspension portion 110 and opposed arms 120, 130 of the garment hanger. As in the first embodiment 10, the upper portion 200 is of a substantially similar shape to a known one-piece moulded garment hanger. That is, the arms 120, 130 are inclined downwards from the horizontal in a direction away from the central suspension portion 110, are raked forward and have somewhat bulbous extremities. That is, as best seen in Figure 10, a front face of the garment hanger is concave and a rear face of the garment hanger is convex, to follow a shape of shoulders of a garment to be supported by the garment hanger. As best seen in Figure 12, upper faces of the arms 120,



130 are joined to an upper face of the central suspension portion 110 by an upwardly concave portion and a lower face of the central suspension portion is downwardly concave.

5 The upper portion 200 forms a major portion of the central suspension portion 110 and substantially half of each of the opposed arms 120, 130 and the lower portion 400 comprises the remaining proportions of the central suspension portion 110 and each of the opposed arms 120, 130. However, the upper and lower portions of the garment hanger may comprise different proportions of the garment hanger than substantially one half.

10 Extremities of the arms 120, 130 are joined by a trouser or skirt bar 500. However, a garment hanger according to the invention does not necessarily have such a bar. As shown in Figure 14, the garment hanger is provided with a suspension hook 600 by which the garment hanger may be suspended, a shank of which suspension hook 600 is joined by a boss 610, shown in Figure 12, to the central suspension portion 110.

15 As best seen in Figures 10 and 11, an underside face of the central suspension portion 110 is additionally provided with a central elongate aperture 700 opening into the central suspension portion, the elongate aperture having a major longitudinal axis along a longitudinal axis of the central suspension portion 110, for receiving an upper, in use, portion of a suspension hook of a further garment hanger. The elongate aperture 700 has opposed semicircular, inwardly concave, opposed ends 710, 711 transverse to the longitudinal axis thereof and parallel planar opposed sides 712, 713 parallel to the longitudinal axis thereof. A peripheral wall extends inwards of the central suspension portion 110 from the elongate aperture 700 to form a slot-like channel extending inwards of the central suspension portion from the elongate aperture, having a front planar portion 721, shown in Figure 14, and a rear planar portion 722, shown in figure 11, parallel and opposed to the front planar portion both substantially parallel to front and rear faces of the central suspension portion.

25 The rear planar portion 722 of the peripheral wall is provided with a projection 730, L-shaped in cross-section, extending partially across the slot-like channel from, and central of, an innermost edge of the rear planar portion of the peripheral wall, such that a base 731 of the L-shaped projection is perpendicular to the planar portion 722 of the peripheral wall and an upright leg portion 732 of the L-shaped projection extends from an inner edge of the base portion inwards of the central suspension portion 110, substantially parallel to the rear planar portion 722 of the peripheral wall.

A right-angle triangular rib 740 supports the L-shaped projection 730, a hypotenuse edge 741 of the right-angle triangular rib 740 extending central of the L-shaped projection 730 from a first position proximate the inner edge of the base portion 731 to a second position on the rear portion 722 of the peripheral wall proximate an underside face of the central suspension portion. A first of the other two edges 742 of the right-angle triangular rib 740 extends from the first position to the peripheral wall 722 and a second of the other two edges 743 extends from the second position to the base portion 731 of the L-shaped projection 730.

As best shown in Figures 14 and 15 the second embodiment 100 of a garment hanger according to the invention is also provided on underside faces of the arms, proximate outer extremities thereof, with fingers 930 extending inwards of the garment hanger from which, for example, a skirt may be suspended by loops fixed thereto. Proximate an outer extremity of each arm there is provided an elongate aperture 900 in the underside face thereof, the aperture having a longitudinal axis lying along a longitudinal axis of the respective arm 120, 130. Extending inward of the aperture there is provided a concave peripheral wall 920 having a quadrant transverse cross-section such that the peripheral wall is curved inwards of the aperture from the underside face of the respective arm 120, 130, to form a pierced recess in the underside face of the respective arm. The elongate apertures 900 have opposed semicircular, inwardly concave, opposed ends 910, 911 transverse to the longitudinal axis thereof and parallel planar opposed sides 912, 913 parallel to the longitudinal axis thereof. Extending inwards of the aperture 900 from an outer concave end 911 thereof towards the central suspension portion there is provided an elongate finger 930 spaced from the peripheral wall 920 thereof. The finger 930 is provided at an inner end thereof with an outwardly, i.e. downwardly in use, angled portion 931.

Referring again to Figures 10 and 11, in use a known suspension hook, of, for example, metal, of a further garment hanger may be inserted through the central elongate aperture 700, into the central elongate channel, past and over the leg portion 732 of the L-shaped projection 730 to be suspended from the base portion 731 of the L-shaped projection. In this manner the garment hanger of the invention and the further garment hanger may be suspended one above another from the suspension hook 600 of the monocoque garment hanger of the invention. The further garment hanger, for example a clip garment hanger or a letter box garment hanger, may be for suspending a lower garment such as a skirt or trousers, so that an upper garment, such as a jacket, shirt or

blouse, may be suspended on the arms 120, 130 of the monocoque garment hanger of the invention and an associated or matching lower garment, for example, suspended from the further garment hanger suspended from the monocoque garment hanger 100.

It will be understood that other shapes of projection than the L-shaped projection 730, for example any hook-like projection, may be used within the central elongate channel from which to suspend a further garment hanger by a suspension hook thereof. Alternatively, a clip arrangement within the central elongate channel may be used to engage the suspension hook of a further garment hanger.

Referring again to Figures 14 and 15, alternatively, or in addition, a skirt may be suspended by skirt loops from the skirt loop fingers 830 of the monocoque garment hanger 100. The downwardly angled portion 831 of the finger facilitates passage of a loop onto the finger 830 so that portions of the loop are located between the finger 830 and the peripheral wall 820. Alternatively, a strapped garment may be suspended by straps of the garment from the fingers 830.

It will be understood that such skirt loop fingers 830 may optionally be moulded in the lower face of the bar 500, or proximate the outer extremities of the arms 120, 130, whether or not a bar 500 is present.

The monocoque structure is resistive to torsional strain so that there is less propensity to torsional twisting of the garment hanger than in garment hangers of the prior art. It has been found that a wall thickness of 1.5 millimetres provides sufficient strength. Most importantly, the continuous skin of the garment hanger has no protruding edge to mark a garment hung on the garment hanger. The absence of a protruding edge also makes handling the garment hanger less unpleasant than handling garment hangers of the prior art.

Because of the method used to attach the bar to the arms of the garment hanger, an extruded bar may be used rather than moulded bars of the prior art, although moulded bars are also suitable for use in a garment hanger according to the invention. The bar may be completely or partially coated with a non-slip, high friction material, such as rubber, in order to grip a garment looped over the bar. Preferably the coating is at least on the top surface of the bar and may also be on at least one of the front and back faces. If the bar is extruded, the rubber coating may be co-extruded with the bar. This allows use of a thinner

coating of rubber, which is relatively expensive compared with typical plastics material of the bar, than other methods of applying a non-slip surface.

Although the bar is illustrated as a hollow right circular cylinder, other cross-sectional shapes of bar than circular may be employed. For example, the bar may have a lozenge or semi-circular cross-section with a convex upper surface and a substantially planar lower surface. It will be appreciated that the shapes of the slots 42, located proximate the extremities of the arms 12, 13 to accommodate opposed ends of the bar 50, may be chosen according to the cross-sectional shape of the bar.

Skirt loop fingers 930 may optionally be moulded in a controlled cavity in the lower face of the bar, or, whether or not a bar is present, proximate the outer extremities of the arms.

Although a garment hanger having an upper portions and a lower portion has been described, it will be apparent that the garment hanger may alternatively have, for example, a front portion and a rear portion joined together. Moreover, the front and rear portions may or may not each form substantially half of the garment hanger. In addition, the monocoque garment hanger may be made of more than two portions, for example one upper portion and two or more lower portions.

Although a garment hanger having two arms has been described, it will be apparent that the invention is equally applicable to a garment hanger having, for example, a single arm.